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ABSTRACT

This publication introduces youth apprenticeship and reports on the experiences of businesses adopting this model. Part I presents the four fundamental components of the youth apprenticeship model--applied academics, on-the-job training, links with postsecondary learning opportunities, and standards and credentials--and posits its use as a promising training approach for dealing with the challenges of work force readiness. Part II reports on numbers and occupational areas involved in the youth apprenticeship movement. It lists reasons driving business involvement: the need to develop a high quality work force; opportunity to affect school reform; and coping with declining number of qualified younger workers. It looks at resources employers contributed--costs of initial start-up, personnel costs of student and mentor wages--and benefits they felt they received--increased technical and employability skills of students, improved performance levels of present employees, establishment of a highly qualified work force, enhancement of total quality management efforts. This advice from pioneering businesses is provided: balance planning with implementation, allow enough time to introduce youth apprenticeship, use an intermediary in getting programs started, and establish standards. Part III describes business-led youth apprenticeship programs and initiatives at the local, state, and federal levels. Part IV reflects on the future of business participation in youth apprenticeship. (YLB)

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How *School* to *Work* works for business

A Report on Business Involvement in School to Work

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How *School* to *Work* works for business

May 1994

NATIONAL ALLIANCE OF BUSINESS

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Preface

Traditionally, America has turned to the schools when faced with national challenges: to integrate large numbers of immigrants at the turn of the 20th century; to meet the demands for higher science skills as a result of Sputnik; and to meet the social challenges of the civil rights movement in the 1960s. However, solving the current mismatch between the skills of the labor force and the skill demands of the workplace requires an unprecedented partnership between business and schools.

Major advances in technology and the introduction of new work structures have raised the skill requirements of the workplace. For example, in the service sector workers use individualized computer stations to track transactions. Workers must have the skills and ability to handle more information and solve customer problems directly. Within the manufacturing sector, robotics have recast the jobs of many workers. Front-line workers who used to do assembly work are now performing sophisticated tasks on computerized control panels. A variety of industries have also adopted high-performance work systems, which utilize total quality management strategies such as teams, quality circles, and job rotation. Workers are now responsible for performing a wider range of tasks and managing their own production schedules.

As a result of these transformations, young people must enter the workforce with higher skills than they needed in the past. They must also be prepared to upgrade these skills to keep up with the changes expected within industry in the decades to come.

"Manufacturing is not the same industry it was a few years ago. We have to convince people it isn' t just a process of putting tops on bottoms. It requires highly sophisticated technology, statistical analysis, and independent thinking."

Chris Powers
IBM Corporation
Endicott, New York

Because new technologies and machinery will be widespread throughout the industrial world, the investment made today in future workers will clearly determine any country's competitive edge. Hence, the strength of a nation's workforce will be based upon the presence of an educational system that ensures the development of strong basic academic skills, provides an effective transition of young people from school to work, and allows workers to upgrade their skills and knowledge continuously.

Early efforts on the part of business to address the needs of our country's educational system were based upon the assumption that if the business community simply provided sound advice and financial support, schools would have all the tools they needed to ensure that young people achieved the skill levels necessary to meet the demands of the workplace. But

experience has taught us that this simple prescription is not enough to cure the skills deficit created by a workplace that is becoming more technical and is undergoing constant change.

Business/education partnerships must cut deeper. There must be a shared responsibility for ensuring that workers become continuous learners. Business people have learned that giving advice is not enough — they must roll up their shirt sleeves and assume responsibility with educators for our youths' education. The economic and technological challenges we face require more effective connections between classroom and work-site activities.

A number of pioneering businesses have developed a new model for training entry-level workers that is becoming known as American youth apprenticeship. Youth apprenticeship formally links learning in school - both secondary and postsecondary - with structured on-the-job training and work experience. While youth apprenticeship models are still relatively new, they appear to be a successful mechanism for preparing entry level workers for high-skilled, high-wage jobs and for providing a structure that enables students to refine their skills and meet the demands of new and more sophisticated technologies.

To date, more than 200 employers are actively engaged in the development of youth apprenticeship programs at both the state and local levels. More programs are expected to get underway upon the enactment of federal legislation. However, if youth apprenticeship is to have any measurable impact on business, there needs to be a greater level of business involvement.

This publication is meant to introduce youth apprenticeship and to report on the experiences of businesses that are adopting this model. As more businesses discover its value, they will become increasingly involved within their local communities.

The report is divided into four sections:

Part I — Presents the youth apprenticeship model and posits its use as a promising training approach for dealing with the challenges of workforce readiness.

Part II — Describes the current status of employer involvement — the barometer of success for creating a national school-to-work system — in the youth apprenticeship movement. This section describes the impact already made on the training practices of a few pioneering businesses around the country.

Part III — Describes various business-led youth apprenticeship programs and initiatives at the local, state and federal levels in youth apprenticeship.

Part IV — Concludes by reflecting on the future of business participation in youth apprenticeship.

Part I — Youth Apprenticeship: Cornerstone of a National School-to-Work System

To prepare young people for the world of work, there must be an active connection between school and workplace learning. Schools are intended to provide students with a foundation of basic skills. However, many students do not take the courses required for performing in today's work settings because they are unable to appreciate the future usefulness of these courses. Moreover, students do not have an opportunity to apply these skills in actual work settings. As a result, they often are unable to transfer this knowledge once they enter the business environment. Schools are unable to capture the culture of the work setting, and therefore, students do not develop the employability skills needed to operate within business.

Youth apprenticeship raises the performance expectations for students and provides support for their skill development by establishing a direct connection between school and work. There are four fundamental components that form the core of the youth apprenticeship model: applied academics, work-based learning experience, formal linkage with postsecondary learning, and the use of standards and credentials.

The Basics of Youth Apprenticeship

Applied Academics:

- *Coursework reflects high standards*
- *Subject matter is taught in an applied context of concrete, real world examples*
- *Employers assist in the development of the curriculum*
- *Vocational and academic subject matter is integrated*
- *Students have an opportunity to apply theories to technical training*

On-the-Job Training:

- *Students are provided with part-time paid jobs*
- *On-site training is carefully structured to ensure that students master all the skills required for the challenges of high performance workplaces.*
- *Experienced workers are trained and provided time to serve as "mentors" to oversee and facilitate students' work and learning*

Links with Postsecondary Learning Opportunities:

- *High school curricula and technical training is coordinated with postsecondary training*
- *College credit is received for selected high school coursework*
- *Work-based learning experiences in high school and postsecondary training are linked*
- *Employers assist with the coordination of secondary and postsecondary training within particular technical areas*

Standards/Credentials:

- *School- and work-based components are guided by a set of industry-recognized skill standards*
- *Program graduates receive certification of mastery of occupational skills*
- *Certification guidelines are designed with and recognized by business*

Applied Academics: Fostering a Greater Understanding

Most students learn best when what they are being taught is placed in an applied context. Thus, in youth apprenticeship programs, academic subjects are taught within the context of concrete, real world examples. Business people work along side educators to develop curricula that reflect the academic and technical skills needed in work settings.

It is the application of academic knowledge that ensures the attainment of high skills. In a youth apprenticeship program, an academic curriculum would have math courses teach students to prepare budgets and calibrate machinery, rather than solve problems that seem unrelated to anything existing outside the classroom walls. Science courses lead to the understanding of systems, rather than the memorization of unrelated facts that students forget over time. Students in rigorous youth apprenticeship programs not only take advanced algebra and physics, but they appear to understand the contexts better. Having gained the ability to apply the material to the world outside the classroom, they have learned more, and better. Perhaps most importantly, we have found that a student's interest in learning is rekindled in a youth apprenticeship program.

Work-Based Learning: Transferring Knowledge

The work-site offers an unmatched learning opportunity. For this reason, the youth apprenticeship model capitalizes on what the work-site has to offer by integrating school-based and work-based learning.

Students are paid to learn at work during the school year and summers. In the work-based learning component of youth apprenticeship, employers provide students with guided learning experiences within a work setting. Students often are given the chance to rotate from job to job at a work-site in order to obtain a broad view of related occupations and skills. To ensure that they get a full understanding of the occupations for which they are being prepared, students perform authentic work under the guidance of a skilled adult mentor who answers their questions and helps them to learn required skills.

Linkage with Postsecondary Training: Fostering a Lifetime of Learning

Youth apprenticeship calls for a new partnership between high schools and postsecondary training institutions. Rather than foreclose learning opportunities, students in youth apprenticeship programs are provided with the structure necessary for further education. Through their experiences in the workplace and the applied understanding of academics they attain in the classroom, students begin to realize the array of opportunities available to them.

Youth apprenticeship programs include a structured agreement with two- and four-year postsecondary institutions where high school students can receive college credits for some of the courses taken in the program. Students soon learn that they are capable of succeeding at the collegiate level. Moreover, programs allow students to apply credits and certificates to four-year academic programs.

Credentials and Skill Standards: Raising Expectations

The content of the school curricula and work-based learning experience is guided by a set of standards determined by schools and business. Youth apprentices who successfully complete programs, in turn, receive an industry-recognized certificate of mastery of occupational skills. This certificate is in addition to academic qualifications earned, such as a high school diploma or postsecondary degree. National legislation to create a system of voluntary skill standards could eventually result in nationally-recognized standards for the award of these certificates.

Systems Approach: Building Upon Existing Programs

Businesses often ask how youth apprenticeship differs from other school-to-work programs. Clearly, there is a wide range of programs that provide students with work-related skills. These programs often involve some of the basic elements of youth apprenticeship. For example, Tech Prep, which is often a program within vocational education settings, provides students with applied learning opportunities. Jobs for America's Graduates links students with part-time jobs and assists with the development of employability skills.

Youth apprenticeship is distinct in that it calls for extensive business involvement. Business helps guide and develop school curricula and provides students with direct and structured experience at an actual work-site. In this respect, business has a genuine role in the development of its future workforce.

Nevertheless, youth apprenticeship builds upon the practices within these other programs. Evidence from the field indicates that a number of schools are trying to develop a work-based learning component within their Tech Prep programs. Several career academies are extending their curricula into other areas within the same school and developing opportunities for students to apply their skills at work-sites. Many vocational education programs are including youth apprenticeship in their reform efforts.

Summary

The changes occurring in our nation's economy require a reassessment of our traditional workforce development practices. Clearly, we need to establish a pipeline of qualified entry level workers. Presently, many entry level workers having a high school diploma or less do not have the skills needed to meet the demands of the workplace. Given the trends described, the skills deficit can be expected to grow even more in the decades ahead unless new approaches for preparing young people for the workplace are adopted by both schools and businesses.

While schools can teach young people fundamental academic skills, schools alone cannot ensure that students are able to transfer classroom knowledge to applicable work scenarios. This is particularly true within work settings that are experiencing rapid changes in technology. Student learning cannot be confined to the four walls of a classroom, but rather it must be extended into the community at large. To do this, schools must have stronger connections with business.

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Business must become more intricately involved in educational efforts to ensure that students are prepared for the demands of the workplace. Youth apprenticeship is proving to be an effective vehicle for integrating the roles of schools and businesses. Youth apprenticeship builds upon a tradition of education reform efforts and youth employment programs, thereby providing a forum within which business can work with schools to improve curriculum and design high-quality jobs that are related to the academic and technical skills learned in school. Simultaneously, work settings are able to redesign their training practices to include structured job training for pre-entry level workers and continuous upgrading of skills for full-time workers. In the end, the boundaries between work and school actually become blurred so there is a seamless sequence of work and learning through the lifetime of employees.

Most Commonly Referenced Education and Training Programs

1. High School Vocational Education

School districts offer vocational training through a variety of models. Students may receive their academic instruction at a general high school in the area and spend the latter part of the day at a vocational center, where they receive their technical training. In other cases, students attend regional technical schools. These schools provide students interested in vocational training with both academic and technical courses at the same site. A few of these schools are technical magnets which focus on a specialized occupational area such as fashion or healthcare.

There are many outstanding vocational programs around the country. In some cases these programs have very strong links with employers. However, vocational programs have been criticized for the lack of connection between academic and technical training. Presently, there are many efforts underway to improve the integration of academic and vocational training, form articulation agreements with community colleges, and adopt elements of youth apprenticeship.

2. Technical Preparation Associates Degree (Tech Prep)

Tech Prep represents a school-to-school transition program, which incorporates applied academics (math, physics, and communications) at the secondary level and promotes articulation agreements between secondary schools and postsecondary institutions. Career areas include health, auto repair, electronics, business, and engineering technicians. Unlike youth apprenticeship models where work is at the center of a student's experience, Tech Prep does not ordinarily include work at all. Employer involvement is usually limited to an "advisory" capacity. A 1990 survey of Tech Prep programs identified 122 programs in 33 states. It has been estimated that 80,000 to 90,000 students participate in Tech Prep Programs each year (Osterman and Iannozzi, 1993).

3. Cooperative Education

Cooperative Education (Co-op) represents the largest of school-based efforts, reaching more than 450,000 junior and seniors annually. In 1992, Congress specifically appropriated $13 million for cooperative education under Title VIII of the Higher Education Act. Students usually attend school part of the day and work part of the day. School credit is received for work experience. Unlike youth apprenticeship, cooperative education does not involve changes in the curriculum, although some programs include a school course that allows students to reflect on their work experiences and to seek job placement in the field of occupational choice for work. High school Co-op programs typically terminate at high school graduation rather than continuing into postsecondary study as do some youth apprenticeship programs (Osterman and Iannozzi, 1993).

4. Youth Programs funded by the Job Training Partnership Act

The Job Training Partnership Act (JTPA) program operates in 633 service delivery areas throughout the United States. JTPA requires that at least 40 percent of its basic funds be spent on educating, training, and placing lower income youth in jobs. These programs cover high school students, dropouts, and low-income high school graduates. Some 300,000 16-21 year olds are served under JTPA's year round training program, not including the separate summer jobs programs.

There are no restrictions preventing JTPA-eligible high school students from participating in youth apprenticeship programs. Program operators, however, report some difficulties in using JTPA money to fund apprenticeship programs with a mix of JTPA students and other students because JTPA funds must be carefully monitored.

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Most Commonly Referenced Education and Training Programs (cont'd)

5. Career Academies

Career Academies provide students with a focused education emphasizing simulation of the work environment and applied academic instruction in broad occupational areas, including finance, tourism, health, electronics, graphic arts, and communications. Since career academies are usually operated as schools-within-schools, they are able to determine their own scheduling, curricular strategies and occupational themes. Students experience job shadowing in their early years, mentoring in their junior year, and paid summer work in the summer after their junior year that might continue during their senior year. No explicit linkages exist between jobs and classes. Nevertheless, employers do serve on steering committees, act as mentors, and provide teachers with summer jobs in industry.

There are three distinct networks of career academies. The Philadelphia High School Academies Project runs 25 academies in 16 high schools, with a total of 2,000 students enrolled. There are 50 California Academies statewide serving approximately 3,000 students. The National Academy Foundation, which operates in a variety of states, coordinates 75 programs and 4,100 students (Osterman and Iannozzi, 1993).

6. Jobs for America's Graduates

Some 21,000 at risk and disadvantaged high school students in 350 high schools in 19 states participate in the Jobs for America's Graduates (JAG) Program. Using a specially trained staff of job specialists, JAG focuses on counseling, motivational work, and job placement as a supplement to regular high school education.

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Part II — Business Involvement in Youth Apprenticeship

In the past two years, youth apprenticeship has rapidly found its way into a variety of industries — health care, aerospace, electronics and specialty machining. Businesses are beginning to realize that this new recruitment and training strategy has clear benefits for their firms, communities, and young people. Nevertheless, there are many employers who know very little about the use of this model because it is still relatively new.

This section reports on the current level of business involvement in youth apprenticeship. In addition to reporting on the numbers and occupational areas involved, this section describes some of the experiences of employers who are actively engaged in the implementation of youth apprenticeship programs within their firms.

Extent of Business Participation: Numbers and Profiles

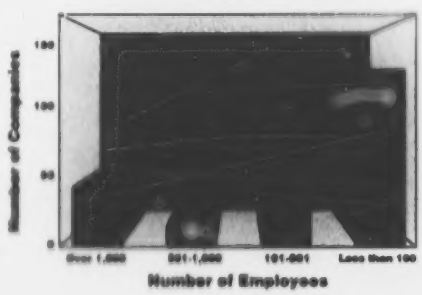
In response to the growing interest in youth apprenticeship, the National Alliance of Business established a Business Center for Youth Apprenticeship in 1993. The Center promotes and builds capacity within the private sector to adopt youth apprenticeship models. As part of its plan, the Center is building a network of employers who are actively involved with or simply interested in youth apprenticeship.

Number of Businesses Involved. To date, NAB has identified more than 200 employers that are actually developing youth apprenticeship programs. While there is great variation on the theme, all the employers identified are using youth apprenticeship strategies that involve some level of organized learning on the job, coordinated with some classroom training. In addition to the businesses already involved in youth apprenticeship programs, 700 businesses have joined the Network to learn more about youth apprenticeship. Considering the fact that youth apprenticeship is a fairly new concept in America, this level of interest and involvement is quite impressive.

Profile of Businesses and Occupational Areas. A number of larger businesses are involved in youth apprenticeship programs. Included in this group is one of the nation's largest banks, a Big Three automaker, a major airline, a national retail chain, a regional telephone company, and two of the country's largest electronics firms.

Small businesses, however, account for the greatest level of activity in youth apprenticeship. Well over half of the businesses developing youth apprenticeship programs have fewer than 100 workers. These small firms do not have the resources to provide in-house training for their workers. They rely heavily on local high schools, vocational education centers, and community colleges. Youth apprenticeship allows them to have a greater level of input into how future workers are trained by being directly involved at both the classroom and work-site levels. Due to their size, these small firms only have the ability to work with one or two students a year.

Size of Businesses Involved



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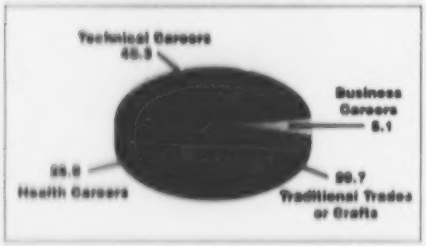
Types of Occupational Apprenticeships



The firms currently active with youth apprenticeship use it in a variety of occupations. Some have a long history of involvement within traditional apprenticeships. Due to an increase in the skill demands with these trade areas, firms have developed linkages between their apprenticeship programs and training programs within secondary-level vocational schools. More importantly, a growing number of firms within industries that have never utilized the apprenticeship model of training are now experimenting with youth apprenticeship. In fact, traditional apprenticeable occupations comprise only 20% of the positions while the remaining 80% are in business, health, and technical careers.

Placement in technical firms accounts for the largest portion (48.3%) of the youth apprenticeships. While firms have traditionally relied on less-educated workers with low or average skills to fill positions, dramatic changes in technology and work structure demand more expertise. Youth apprenticeship is being used within these industries to introduce young people to the basic technologies and work structures while they are in a formative stage.

Firms within the health care industry are also significantly active in youth apprenticeship programs, accounting for more than 25% of the apprenticeships. Given the growth of this industry, it is a perfect setting for youth apprenticeship.

While business and financial services account for the smallest portion of apprenticeships (5.1%), many communities with programs in other occupational areas have reported plans to expand into the financial services industry. In the past, these employers could hire high school graduates to fill positions as bank tellers and insurance claims agents. Today, the equivalent entry-level positions in these industries demand much higher skills. Youth apprenticeships enable young workers to develop the skills and work ethics needed for these positions.

The number and profile of the businesses involved in youth apprenticeship appear to indicate that this method of training provides many benefits for employers who are trying to develop a qualified workforce. However, it is important to look beyond the numbers to discover the actual experiences of these businesses.

The Experiences of Pioneering Businesses Developing Youth Apprenticeship Models

In May 1993, the Alliance — along with the American Youth Policy Forum, Jobs for the Future (JFF), and Manpower Demonstration Research Corporation (MDRC) — brought together fifteen employers from around the country to learn more about the experiences of firms in the process of developing youth apprenticeship training models. While the experiences of the represented employers varied, there were many common themes. This section describes some of these general trends.

Reasons Driving Business Involvement

Isolating one single reason for any business decision is difficult; multiple factors almost invariably come into play. Untangling the many factors involved with an employer's decision to try a new training model is no different. Three major reasons influenced the decisions of those firms represented at the meeting: 1) the need to develop a high quality workforce; 2) corporate responsibility; and 3) recognition of an aging workforce and decline in the number of qualified younger workers.

Reasons Driving Business Involvement in Youth Apprenticeship

1. Need to Develop a High Quality Workforce
2. Corporate Responsibility
3. Recognition of Aging Workforce and Decline in the Number of Qualified Younger Workers

1. Need to Develop a High Quality Workforce

Many of the employers attending the meeting were involved with youth apprenticeship because they wanted to ensure a high quality workforce for their firms. In some cases, these businesses had an immediate need for high-skilled technical workers, and in other cases, they were more generally concerned about establishing a high-skilled workforce for the future needs of their firms and their local communities.

"Many German managers were amazed at the low skills level of our entry workers. They couldn't understand why someone who graduated from an American high school might not read at a 12th grade level."

John Tobin
Siemens
New York, New York

Employers from the machine tooling industry reported that they had to recruit toolmakers from Europe because they could not get trained workers within the United States. American machinists often do not enter the field until they are 28 or 30 years old. In some cases, machinists enter the field after having a series of short-term jobs while others enter after serving in the military. If entry-level machinists in America are to match the skill levels of their European counterparts, they need to begin training at the same age — 5 to 10 years earlier than they do now. To meet this objective, these firms are using youth apprenticeship to begin the training of young workers even before they formally enter the field.

Hilti Corporation, which has its Western Hemispheric office in Tulsa, Oklahoma, is an example of a firm that had difficulty finding skilled machinists. However, having its roots in Litchenstein, Hilti was quite familiar with the quality of workers trained through youth apprenticeship programs. After convincing the public schools and some additional businesses of the advantages of youth apprenticeship, Hilti was able to initiate the *Craftsmanship 2000* program in Oklahoma.

2. Opportunity to Affect School Reform

In addition to meeting immediate labor market needs, youth apprenticeship was seen as a means of making a contribution to their community. Many of the businesses had come to the conclusion that their participation on business/education forums had had a limited effect on the educational experiences of young people. Through youth apprenticeship, they felt better able to influence the content of the academic and technical curricula and share some responsibilities for teaching young people.

The desire to help local schools was one reason the *Raymond Corporation* in Greene, New York, became involved in the *Cornell University Youth Apprenticeship* program. The company felt its long-term success in this small upstate New York community depended upon effective local schools. While the Raymond Corporation had participated in a variety of advisory committees and summer jobs programs, youth apprenticeship allowed the firm to have much more influence on what and how students were taught.

3. Coping with the Declining Number of Qualified Younger Workers

Some of the firms represented had experienced low turnover in entry level workers, but were witnessing a "graying" of their workforce. Looking to the not-too-distant future, these businesses realized a need to establish a pipeline of new skilled workers. In some cases, such as those relayed by employers representing the printing industry in California and Wisconsin, the average age of workers was increasing and at the same time the industry was experiencing an image problem among youth.

Graphic Arts Monthly, a national trade magazine, raised the issue in the printing industry when it unveiled the results of a survey wherein 1,500 high school students ranked printing as their least preferred of 16 careers. Banta Corporation, one of the nation's largest printing companies, went on the offensive. It increased its involvement with schools — conducting tours for students, bringing teachers out to its shops to familiarize them with the business, and going to schools and presenting career awareness workshops. For Banta, adopting the youth apprenticeship model was the most logical "next step" to guaranteeing a future workforce of skilled printers.

Sears Roebuck & Company had a similar experience. Sears was concerned with the long-term quality of technicians because the average age of its repair technicians was 49. Moreover, repairing modern washing machines, refrigerators, and more recently, microwave ovens, required greater levels of technical knowledge on the part of technicians than it had 10 years ago. Sears had to find a way to begin the training process before technicians were hired. Using the youth apprenticeship model, Sears is attempting to guide schools on how to best integrate the basic principles of electricity and mechanics into the training curriculum. By

having students work on-site at their product service centers, Sears has also been able to train its future technicians directly.

Resources Contributed and Benefits Received

Although there may be a number of factors driving a business decision, the final factor is ordinarily determined by the "bottom-line." Even a business that recognizes the importance of investing in human capital wants to know that, in the end, the training practices were cost effective and resulted in better trained workers. This section looks at the resources that the employers contributed and the benefits they felt they had received.

Resources Contributed

The employers point to two main program expenses: 1) the initial costs involved with program design and start-up, and 2) the personnel costs of mentors and youth apprentices.

Resources Contributed

1. Initial Start-up and Program Development
2. Personnel Costs: Wages of Students and Mentors

1. Costs of Initial Start-Up

Employers felt the resources expended during start-up were generally the most significant costs involved with youth apprenticeship programs. In many cases, human resource managers had participated on planning committees, spending much of their time negotiating program details and policies. For many, balancing the need to plan and the desire to implement was a significant challenge. As noted later, many businesses recommend getting started early and refining the program as it evolves.

Another significant cost involved technical workers from the firms who spent time advising classroom instructors on curricula and designing the coordination between classroom and work-based learning. While these activities were found to be both costly and time-consuming, the firms felt that once the program was up and running, these costs would be dramatically reduced. In addition, the firms believed that new programs in the future could lower their start-up costs by building on the experience of the pioneering projects.

2. Personnel Costs of Student and Mentor Wages

The employers felt that once their programs began operating, there were two significant costs incurred. The first was the wages of front-line workers who served as mentors for apprentices. These workers play a critical role in providing instruction, support and supervision to the apprentices. Although they were productive, their added responsibilities deterred them from their daily routines when apprentices were on the job. And yet, as the next section

mentions, the employers were more likely as not to have observed an improved performance on the part of these workers.

The second cost was the wages of the apprentices themselves. The amount of these wages varied, and in most cases, was calculated on a per student basis. Many programs used intermediaries to coordinate activities and administer the wages. Many of the employers contributed a stipend to a subsidiary of the local chamber or non-profit agency which then could distribute monies to students on a regular basis. This structure was apparently most helpful when a consortium of businesses was involved. It often solved local problems concerning liability or workers' compensation.

"What about the cost of not doing it? The price of waiting is too great!"

David Host
Allied Signal
Phoenix, Arizona

While employers felt there were significant costs involved with planning programs and developing curricula, they viewed these as one-time costs. Said in another way, their programs were operating at a research and development level. With time, they expected their programs to benefit from operating at scale and that any new programs would have the advantage of building upon pre-existing programs.

Not all of the youth apprenticeship costs were net additions. Employers commonly had added costs associated with new hires. These costs — the time and resources spent advertising, screening and hiring new workers, not to mention orienting them to the job — can be reduced or even eliminated with an effective youth apprenticeship program. Weighing these costs and factors against the benefits described in the next section is no simple matter. Clearly, much more needs to be learned about the "real" costs of this model.

Benefits Received

To be truly successful, the benefits of a training model should outweigh the resources expended in the effort. Youth apprenticeship is no exception. Generally, the employers recognized four key benefits: 1) increase in skills and employability levels of students; 2)

Benefits Received

1. Increase in Skill and Employability Levels of Students
2. Improved Performance Levels of Incumbent Workers/Mentors
3. Establishment of a Highly Qualified Pool of Workers
4. Enhancement of Total Quality Management Efforts

improved performance levels of current workers/mentors; 3) establishment of a highly qualified pool of workers; and 4) enhancement of total quality management efforts.

1. Increased Technical and Employability Skills of Students

The employers spoke with great pride about the accomplishments of their student apprentices. Student outcomes, such as possessing a career focus, attaining technical skills, finishing high school, attending college, and gaining a greater sense of self-confidence were the most widely noted accomplishments.

The employers felt that youth apprenticeship allowed students to learn firsthand about working in a corporation or business. Through the integration of their classroom and worksite experiences, students were able to understand the practical side of their academic training.

2. Improved Performance Levels of Present Employees

The employers pointed to an unexpected benefit of their youth apprenticeship programs: When employees who had lost the edge after years on the job were chosen as mentors, they frequently demonstrated a renewed sense of pride in their personal work. As these employees began teaching their job to the apprentices, they realized the detail and knowledge involved. In some cases, staff who were resistant to training decided to enroll in continuing education programs.

Overall, youth apprenticeship provides these businesses with a win-win training situation where new and experienced workers learn together.

"We were all so focused on the students, it was a surprise to realize the serendipitous changes in the attitudes of the mentors."

Kathy Rice
Massachusetts General Hospital
Boston, Massachusetts

3. Establishment of a Highly Qualified Workforce

The ultimate measure of any training model is its ability to produce highly trained workers. The employers interviewed by the National Alliance of Business had both immediate and projected labor shortages. Employers from technical industries, such as machine tooling, used youth apprenticeship to fill short-term openings. The New York-based company, *Siemens*, was using a youth apprenticeship program at its Florida site to fill its personnel needs. If the program proves effective, Siemens plans to replicate the model at additional sites around the country.

Some of the other firms represented did not have an immediate need for entry workers. However, they were using youth apprenticeship to build a potential pool of qualified applicants for future openings. For example, *Allied Signal* in Phoenix, Arizona, trains apprentices through a cooperative summer program with the department of vocational education. Based on performance, students are then selected to participate in a year-round program. The company has actually hired a few students while the names of other successful trainees are kept on file to be used as openings arise.

4. Enhancement of Total Quality Management Efforts

A number of employers were experimenting with youth apprenticeship as part of an overall attempt to establish learning environments within their firms. They felt that youth apprenticeship enhanced the total quality management (TQM) efforts within their firms. By having workers within the firm teach the youth apprentices, they were able to learn more about their own jobs.

Advice from Pioneering Businesses

Developing a highly skilled and qualified workforce in the midst of a changing global economy is by no means an easy task. Still, there is a growing consensus among employers that they have no other choice but to change the way business is done, particularly the manner in which they train workers. Since technology is available throughout the world, the only real competitive edge for companies is the quality of their workers.

Although youth apprenticeship is a promising model for improving the way businesses recruit, hire, and train workers, it is not necessarily a simple solution. It requires re-engineering the workplace and reforming the schools. Adopting such changes requires taking risks, refining experimental approaches, and building upon lessons learned. The employers that are blazing the trail make four recommendations: 1) balance the need to plan with the desire to implement; 2) allow enough time to introduce youth apprenticeship; 3) utilize an intermediary in getting programs started; and 4) establish a set of competencies and skill standards.

Advice from Pioneering Businesses

1. Balance Planning with Implementation
2. Allow Enough Time to Introduce Youth Apprenticeship
3. Utilize an Intermediary in Getting Programs Started
4. Establish Standards

1. Balance Need to Plan with Desire to Implement

Determining just how much time is needed to get an effective project going cannot be determined by some simple formula. Those employers who "rushed in" — spending only a few months planning and developing a program structure — were left with a variety of kinks to work out. The end result was a confused staff and a loss of participants.

Employers who planned extensively spent much of their time negotiating and working out administrative details. In retrospect, they felt some of the planning decisions could have been resolved during implementation. The employers felt that there are enough lessons from experiments available to new programs that the start-up time can be reduced for those employers who are now just beginning to adopt youth apprenticeship. The time previously spent on general planning can be spent on training staff, designing curricula, and structuring the work-site learning component.

2. Allow Enough Time to Introduce Youth Apprenticeship

Employers recommend starting early to assure current employees of their own terms of employment before introducing youth apprentices into the work-site. Employees need to understand that the apprentices are exploring career options and are not there to displace them from jobs.

Conducting a campaign to introduce the concept of youth apprenticeship is a time-intensive task. It takes time to introduce such an extraordinary change to our traditional education and business settings. Not only is youth apprenticeship new to front-line supervisors and teachers, but parents and students often resist committing to a pathway to work which they think might eliminate the possibility of future educational opportunities. The opportunity and options of the approach need to be explained to all people involved in order to address their specific questions.

"You're talking about starting totally cold with a school system that couldn't even pronounce 'apprenticeship.' Most of the employers had never heard of it."

A. Wayne Rowley
Craftsmanship 2000
Tulsa, Oklahoma

The businesses that are most successful are those that have traditionally placed a high value on training and, therefore, had opportunities in place for their current workforce to pursue additional training and to upgrade their skills and/or pursue additional training.

Siemens established a training center at its manufacturing site in Florida to demonstrate clearly the importance of continued training for all workers. Incorporating a youth apprentice into this model was a natural progression. Now, both future and current machinists work side by side.

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Massachusetts General Hospital (MGH) offers an extensive continuing education program to its employees. Nevertheless, many of the employees are reluctant to make the two or three year training investment required for many licensed health care positions. On the other hand, high school age youth are used to operating under futuristic terms. Through its youth apprenticeship program, MGH found that when high school students are provided with part-time work opportunities during their secondary and postsecondary schooling, they committed to longer-term training programs. MGH anticipates that the youth apprenticeship program will provide the hospital with a pipeline of workers for years to come.

Some of the employers have adopted the youth apprenticeship strategy in conjunction with their efforts to move to a high performance work setting. These businesses have become more concerned with training workers in problem-solving, greater independence, and flexibility. The knowledge of systems has become more critical than the knowledge of specific technical skills which will only become outdated. In many cases, training strategies are developed in conjunction with investments in new machinery and technology.

"Changes within our organization require that everyone operate as a 'worker-learner.' It is much easier in many ways for young apprentices to play this dual role than our long-term workers."

Heide Bowne
Raymond Corporation
Greene, New York

3. Make Use of an Intermediary

Youth apprenticeship requires cutting deeper into the traditional practices of schools and businesses than is feasible for a single employer to take on alone. Many of the employers have benefitted from the use of an intermediary. These third parties commonly include private industry councils, universities, chambers of commerce, and trade associations. Being neutral, these entities can play a critical role in convening groups, managing programs, identifying job slots, developing curricula, and providing the governance structure. In addition, many of the employers looked to such organizations as the National Alliance of Business, Jobs for the Future, and Cornell University for technical expertise.

4. Establish a Set of Standards

Generally, the employers agree that job training initiatives such as youth apprenticeship should be built on school-based and industry-based standards. There is no need to start from scratch in developing industry skill standards. Consortia can build on already existing standards established by specific trade associations, Vocational and Industrial Clubs of America, and the U.S. Department of Labor.

The employers warned against the establishment of standards that were too limited and that pigeon-holed people. Generally, they felt that skill standards need to be broadly defined because technology within the workplace is forcing skills to change constantly. Current

workers are struggling with applying old skill sets to new problems. In the case of Germany, the jobs for which industries once set standards are no longer there.

"We must work to eliminate the 'stovepipe' mentality which only results in a narrow set of standards."

Charles Lawrence
Polaroid Corporation
Norwood, Massachusetts

Summary

The experiences of the employers described in this section demonstrate the potential of youth apprenticeship for enhancing the partnership between schools and business. Previous education and employment training programs emerged in response to economic swings, urban unrest, or a desire to assist the economically disadvantaged. The youth apprenticeship programs which these employers are designing differ from earlier models in two respects. First, they are trying to establish a direct link between educational institutions and their firms. These employers have found that when technology and work systems are rapidly changing, the workplace must become a learning laboratory for both new and current workers. Second, many of these employers view youth apprenticeship as a systems approach. These employers are working within communities to build on current education and workforce training programs in order to create a seamless system of learning for workers.

The employers who are actively developing youth apprenticeship programs have discovered a range of benefits, from the establishment of a pipeline for highly qualified workers and the enhancement of local school improvement efforts, to the betterment of current worker performance and the progression of total quality management programs.

Clearly, the factor which will determine the extent of business involvement will be the rate of return on investment. As cited by these employers, start-up costs can be quite significant. Many employers have shared these costs through local business consortia. These costs are also expected to diminish through economies of scale as programs expand to include additional businesses, students, and occupational areas.

Creating an effective school-to-work system will mean bringing these pilot programs to scale. To do this, initiatives must take place at the local, state and national levels. While governments and schools will most likely take the lead, the experiences of the successful programs mentioned in this section prove that businesses must be prime partners. It is just common sense. How can an initiative meet its objective of a quality workforce without business involvement? It can't. Business must participate in the design of learning experiences, both

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within the classroom and on the job site. Only business can inform schools on the skill demands and challenges occurring at the work-site. Work-site supervisors and classroom educators must work as partners to confirm that students possess the problem solving skills and technical abilities needed to meet the demand of the workplace.

Part III — Moving Forward: Local, State, and Federal Initiatives

Despite the concept's newness, youth apprenticeship is underway in small towns of rural Maine, suburban Chicago, and in cities such as Boston and Los Angeles. Even the list of businesses actively involved is expanding steadily. More importantly, a new federal effort is currently being launched by the Clinton Administration which will surely have a dramatic impact on youth apprenticeship activities at both the state and local levels.

This section describes some pilot programs and examines their achievements. It also reviews initiatives to scale up efforts within states and summarizes the new federal school-to-work legislation.

"In Europe there is a cultural mindset to support the community and youth. In this country, we are nearing the realization that there are no more young people to waste. Maybe a youth apprenticeship system can contribute to a new mindset."

William Bloomfield
Center for Corporate and Education Initiatives
New England Medical Center
Boston, Massachusetts

Local Pilots: Putting Theory into Practice

The actual potential of youth apprenticeship is best found in the achievements of local programs. Here, new levels of collaboration have been established between schools and businesses. These partnerships have resulted in valuable changes.

Real changes have been made in the classroom. Academic teachers have begun to work collaboratively with teachers in the vocational and technical areas. Industry experts have teamed up with classroom teachers to redesign course content and create new teaching strategies. As a result, students in youth apprenticeship pilot sites are not only taking more advanced courses in science and math, but are beginning to understand the applications of these subject areas.

The workplace has become an extended classroom for both students and workers. By receiving experience at a work-site, students have a chance to apply the skills and knowledge they have attained in the classroom. Students are being taught by workers in the fields of manufacturing, financial services and healthcare. At the same time, the work-site mentors or "meisters" provide one-on-one support and guidance to students. The mentors gain a better understanding of their jobs through their teaching roles and students are able to develop a personal sense of direction and better understanding of the demands of the adult world.

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Businesses have found a real niche in local education reform efforts. Moving beyond the advisory role that restricts employers involved in traditional business/education partnerships, youth apprenticeship allows businesses to have a measurable impact. Not only are they directly responsible for course content, but employers are involved with the actual teaching of students. Business is directly involved in setting standards that directly relate to the needs of industry. In many cases, the involvement of business in these school programs has resulted in lengthening the school day, flexible scheduling for students and teachers, and the establishment of standards and competencies. By directly participating in youth apprenticeship programs, businesses know the level of skills that young people bring to their workplace.

To better illustrate the youth apprenticeship model, four local youth apprenticeship programs are described below.

1. Craftsmanship 2000

In Tulsa, Oklahoma, local businesses have established a partnership with the education system to develop a four-year program in the metalworking industry. Through the *Tulsa Chamber of Commerce*, businesses such as *American Airlines, Hilti Corporation* and *T.R. Williams* have created a non-profit enterprise that supports the training of young people by combining academic, technical, and work-based training. Students serve as apprentices in a metalworking firm, beginning in their first year.

The companies and schools have set very high standards for the program. Knowing that students would need more intensive training to meet these standards, the businesses convinced the schools that the program needed to be expanded into an eight-hours-a-day and 220-days-a-year program — considerably more than the six-hour days and 175-day years in current practice.

Upon completing the program, students receive a high school diploma, an associate degree from an Oklahoma technical college in metalworking, and a certificate for skilled employment in the metalworking industry. Students are able to work in the industry or continue their education at a four-year institution.

The Tulsa Chamber of Commerce has plans for applying this successful model to additional industries within the community.

2. Cornell Youth Apprenticeship Demonstration Project

In Broome County, New York, Cornell University has taken a prominent role in pulling together local employers to create a link between the classroom and work experiences for a group of young people. The program currently enrolls 40 junior and senior high school students from six school districts. Youth apprentices spend 10 to 20 hours per week, including summer, in supervised, paid work experiences in manufacturing and engineering technology, health care, and administration and office technology.

Cornell's Youth and Work Program developed the approach, manages its daily operation, and conducts formal research on aspects of the program that are pertinent to developing a national school-to-work system.

The consortium of employers involved in the program include: *IBM Corporation at Endicott, Anitec Imaging, Binghamton General Hospital, Security Mutual Life Insurance Company*, and the *Raymond Corporation*.

3. *Project ProTech-Health Care*

Responding to the growing demand for skilled workers in the local healthcare industry, the Boston Private Industry Council (PIC) formed a partnership with the Boston Public Schools and seven teaching hospitals — *Boston City Hospital, Brigham and Women's Hospital, Massachusetts General Hospital, New England Baptist Hospital, New England Deaconess Hospital, New England Medical Center*, and *St. Elizabeth's Hospital*. The goal of this effort is to establish a working relationship between high schools and hospitals within the City of Boston so that students can gain the technical and academic skills necessary to qualify for jobs that account for a large portion of the city's labor market.

During their junior year, students explore career options in the healthcare field through a series of introductory seminars and clinical rotations at the hospitals. Participating students then begin part-time, work-based experience. In their second year, the hospital-based training becomes more focused. Upon graduating from high school, most students split their day between taking community college courses and participating in hospital-based training in their specialty.

Students graduate from the four-year program with an associate degree and professional certification in occupations such as radiologic technology, nuclear medicine technology, physical therapy, and medical secretary. Students who decide not to pursue an associate degree can earn certification in other occupations.

4. *Appliance Repair Technology Project*

Sears Roebuck & Company, the nation's leader in home appliance sales and repair services, and the National Alliance of Business initiated a project to develop a higher level of technical knowledge in high school students who might then work within the appliance repair, electronics, and heating-ventilation-air conditioning (HVAC) industries.

Sears training staff and vocational educators from the *DuPage Area Occupational Education System* in suburban Chicago worked together to develop a curriculum that was grounded in the basic scientific principles involved with new appliance technology. Students work at Sears Product Service Centers during the school day, applying the technical knowledge gained to real work in the field.

The Alliance has now formed a consortium of businesses within the industry that includes Sears, Whirlpool, and Maycor. Plans have been made to distribute the project model to other sites around the country.

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State Initiatives: Moving Beyond Pilots

Local programs illustrate the potential that lies in youth apprenticeship. Students are engaged in experiences grounded in high level content and high expectations, while employers are directly involved with shaping their future workforce.

Despite the benefits realized by this small group of students and employers, real value will be found when this set of promising pilot programs is incorporated into a state-wide and national school-to-work system. This section examines recent efforts by a group of select states to bring youth apprenticeship to scale.

1. Maine

After returning from a study tour of Germany, the governor of Maine reassessed his state's workforce development system. Adapting some of the ideas learned abroad, legislation was passed establishing a Center for Youth Apprenticeship on the campus of Southern Maine Technical College. The Center works with the state departments of Education and Labor to initiate the development of pilot sites.

The work-based learning component of the pilot programs is extensive. Student apprentices alternate their school and work-site learning over the course of the year, rather than during the same day or week. Students in the 11th and 12th grades spend 20 weeks in school and 30 weeks working directly for an employer. After graduating from high school, the students enter the Technical College for 16 weeks of classroom training, and then spend 34 weeks with an employer.

The Center is working with employers and the state's six technical colleges to develop classroom curriculum. In addition, the Center for Youth Apprenticeship is responsible for working with committees of business and labor to develop occupational skill standards, which are then sanctioned by the Center's Board.

Among the businesses involved in the state's initiative are *Blue Cross and Blue Shield, UNUM Insurance,* and *L.L. Bean.* Currently, the program serves students. The state hopes to double the level of participation each year and to have statewide coverage in all high schools and regional vocational centers by the 1996-1997 school year.

2. Oregon

In Oregon, the primary responsibility of the state's youth apprenticeship initiative, which was passed in 1991, is shared by the Apprenticeship and Training Division of the Bureau of Labor and Industries, and the Office of Professional Technical Education of the Department of Education.

Under the state's initiative, all youths in grades K-10 must pass a formal test that allows them to earn a Certificate of Initial Mastery (CIM). The state has established alternative learning centers to provide students who fail this test with the assistance they need to achieve this goal.

After students earn their CIM, they select a college preparatory path or one of a series of two-to-five-year professional and technical degrees. The latter results in an award of a Certificate of Advanced Mastery (CAM) upon successful completion. Pursuit of the CAM is open to any student who passes the CIM. Students in youth apprenticeship programs must be 16 years of age or older and enrolled in a vocational/technical program.

3. Pennsylvania

The Pennsylvania youth apprenticeship program has used local economic development agencies as the catalysts to organize over 75 small manufacturing and machine shops from around the state. Through this network, employers, high schools, and colleges have created a working partnership.

The program originated in the late 1980s when business and government leaders identified growing shortages of skilled workers in the state's metalworking industry and determined that current methods of preparing employees were inadequate to meet the labor demands.

With input from a broad cross section of employers, the program was established as a state-sponsored, non-profit organization working through regional industrial Resource Centers, which regularly provide technical assistance and management consulting services to employers throughout the state. The program has grown to include 79 different metalworking companies at six regional sites sponsoring 105 apprentices.

The principal strength of the program is its curriculum, which fully integrates academic, technical, and work-site learning. Academic and vocational teachers are teamed with work-site supervisors to ensure that students fully master the academic, technical, and work habit requirements of the increasingly sophisticated technology in the metalworking industry.

The Federal Venture: Establishing an Infrastructure

The School-to-Work Opportunities Act will establish a national framework for the development of systems in all states in order to help youth make the transition from school to the workplace. The School-to-Work Opportunities Act will provide states with venture capital funds to foster the development of programs. States will be eligible to apply for development grants to the U.S. Secretaries of Labor and Education for awards that would not exceed $1,000,000 in any fiscal year.

The federal school-to-work programs are required to integrate work-based and school-based learning, and to provide a student with the opportunity to complete a career major. In addition, the programs must include each of the following basic program components.

- ***work-based learning*** - which must include a planned program of job training and experiences; paid work experience; workplace mentoring; instruction in general workplace competencies; and broad instruction in a variety of elements of an industry.

- ***school-based learning*** - which must include career exploration and counseling; a career major; a program of study designed to meet challenging academic standards and the

requirements necessary to earn a skill certificate; and regularly scheduled student evaluations.

- ***connecting activities*** - which include matching students with a work-based learning opportunity; serving as a liaison among the employer, school, teacher, parent, and student; providing technical assistance and services for 1) designing work-based learning components, and counseling and case management services, and 2) for training teachers, mentors, and counselors. Other activities would include providing post-program assistance to students; collecting and analyzing information regarding post-program outcomes of students; and linking youth development activities under this Act with employer strategies for upgrading the skills of their workers.

The Act also authorizes the U.S. Secretaries of Labor and Education to award implementation grants to states on a competitive basis. These grants will allow states to implement a comprehensive, statewide school-to-work system. In addition, competitive grants will also be awarded to partnerships in states that have not received an implementation grant but are ready to begin implementing an effective school-to-work system on a local or regional level.

Part IV — If Not Now, When?

Business must be devoted to creating a qualified workforce. Given the challenges posed by technology and new work structures, the training pipeline of our nation's workers must begin with a sound education and an effective school-to-work transition. This is the goal of youth apprenticeship. But, developing such a system cannot be realized without a firm pledge from business.

According to a 1993 survey conducted by the National Alliance of Business, the time is right for moving forward on a school-to-work agenda. The survey of 4,170 public high school principals and 2,675 small business owners showed a strong majority of both groups (98%) agreed that they should join forces to prepare young people for work. More than two-thirds of the employers surveyed said they would be willing to commit time and money to working with a school and part-time workers in order to have better trained workers. Nearly 95% of the principals surveyed said they would be willing to alter their school's curriculum to include courses that relate to particular careers.

The investment made by businesses involved in the pilot projects highlighted in this report has formed a foundation on which to build. Recent initiatives by states and the federal government have created a window of opportunity. Nevertheless, a national campaign must be launched to engage a meaningful segment of the business community in school-to-work programs.

The National Alliance of Business is devoted to promoting and supporting business involvement in youth apprenticeship, and the development of a school-to-work system. To meet the anticipated demand by business for information, assistance, and research on youth apprenticeship, the Alliance has established the Business Center for Youth Apprenticeship. The purpose of this Center is to assist businesses in their school-to-work ventures by establishing a network of employers who are interested in working with their local school systems or even nationally through their respective industry associations.

A description of resources available to businesses interested in adopting youth apprenticeship programs within their firms and assisting with the development of school-to-work systems in their local communities can be found in the appendix of this report.

For more information on business involvement in school-to-work programs, contact:

National Alliance of Business
Business Center for Youth Apprenticeship
1201 New York Avenue, N.W.
Washington, D.C. 20005-3917

1-800-787-2938